

## SYSTEM FOR CARDIAC PROCEDURES

### **CROSS-REFERENCE TO RELATED APPLICATIONS**

- TM  
11/17/04
- 5 This application is a continuation of co-pending application Serial No. 08/819,455, filed March 17, 1997, which is a file wrapper continuation of application Serial No. 08/453,298, filed May 30, 1995, now abandoned, which is a divisional of application Serial No. 08/282,192, filed July 28, 1994, now issued as U.S. Patent No. 5,584,803, which is a continuation-in-part of application Serial No. 08/162,742, filed December 3, 1993, which is a continuation-in-part of application Serial No. 08/123,411, filed September 17, 1993, which is
- 10 a continuation-in-part of application Serial No. 07/991,188, filed December 15, 1992, which is a continuation-in-part of application Serial No. 07/730,559, filed July 16, 1991. This application is also a continuation-in-part of copending U.S. patent application Serial No. 08/159,815, filed November 30, 1993, which is a U.S. counterpart of Australian Patent Application No. PL 6170, filed December 3, 1992. The complete disclosures of all of the
- 15 forementioned related U.S. patent applications are hereby incorporated herein by reference for all purposes.

### **FIELD OF THE INVENTION**

- 20 This invention relates generally to devices and methods for performing cardiovascular, pulmonary and neurosurgical procedures wherein the patient is placed on cardiopulmonary bypass. More specifically, the invention relates to devices and methods for isolating the heart and coronary blood vessels from the remainder of the arterial system, to facilitate arresting the heart and establishing cardiopulmonary bypass. This invention also relates to methods and systems for performing minimally-invasive cardiac procedures such as
- 25 the endovascular placement of or removal and replacement of heart valves.

### **BACKGROUND OF THE INVENTION**

- Various cardiovascular, neurosurgical, pulmonary and other interventional procedures, including repair or replacement of aortic, mitral and other heart valves, repair of septal
- 30 defects, pulmonary thrombectomy, coronary artery bypass grafting, angioplasty, atherectomy, treatment of aneurysms, electrophysiological mapping and ablation, and neurovascular procedures, may require general anesthesia, cardiopulmonary bypass, and arrest of cardiac function. In such procedures, the heart and coronary blood vessels must be isolated from the remainder of the circulatory system. This serves several purposes. First, such isolation
- 35 facilitates infusion of cardioplegic fluid into the coronary arteries in order to perfuse the myocardium and thereby arrest cardiac function, without allowing the cardioplegic fluid to be distributed elsewhere in the patient's circulatory system. Second, such isolation facilitates the use of a cardiopulmonary bypass system to maintain circulation of oxygenated blood